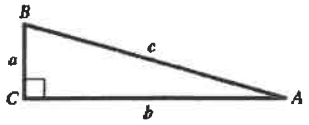
**Cofunctions**




$\sin A = \frac{a}{c} = \cos B$

$\tan A = \frac{a}{b} = \cot B$

$\sec A = \frac{c}{b} = \csc B$

**Cofunction Identities**
For any acute angle $A$, the following hold.

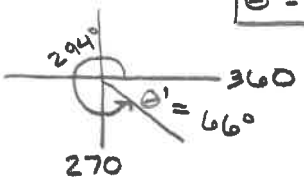
$\sin A = \cos(90 - A)$ $\quad \sec A = \csc(90 - A)$ $\quad \tan A = \cot(90 - A)$

$\cos A = \sin(90 - A)$ $\quad \csc A = \sec(90 - A)$ $\quad \cot A = \tan(90 - A)$

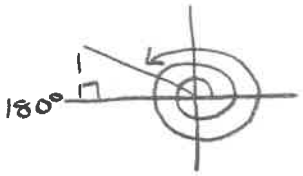
1. Write each function in terms of its cofunction
   a. $\sin 9^\circ$ $= \cos 81^\circ$
   b. $\cot 76^\circ$ $= \tan 24^\circ$
   c. $\csc 45^\circ$ $= \sec 45^\circ$

**Reference Angles:** positive acute angle made from the terminal side of an angle to the x-axis

2. Find the reference angle for each angle:
   a. $294^\circ$ $\quad \theta' = 66^\circ$

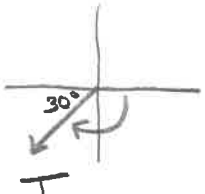



   b. $883^\circ$ coterminal angle $163^\circ$ $\quad \theta' = 17^\circ$

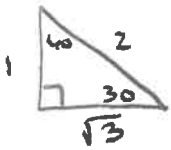



* 180 − 163 *

3. Find the exact value for each expression:
   a. $\sin(-150^\circ)$ $= -\frac{1}{2}$




$\theta' = 30^\circ$



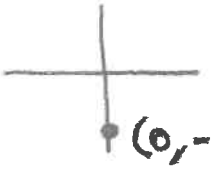

   b. $\cot 780^\circ$

coterminal $= 60^\circ$

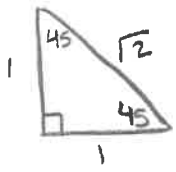
$\theta' = 60^\circ$

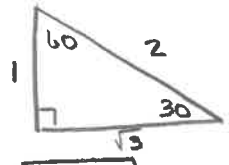

$\cot 780 = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

   c. $\cos 270^\circ$ $= 0$




$\star \cos\theta = \frac{x}{r}$

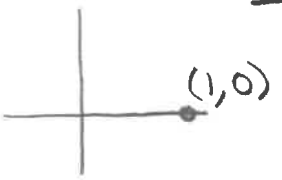



## 5.3 Trigonometric Function Value and Angle Measures

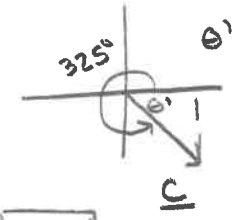
Honors Algebra 2 with Trig

d. $\sin 0° = 0$

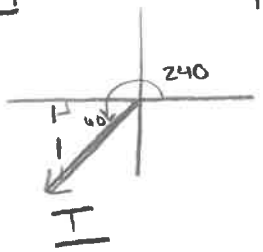



$\star \sin\theta = \frac{y}{r}$

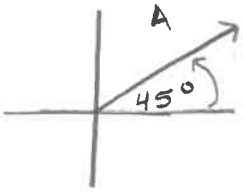
e. $\csc 325° = -\frac{\sqrt{2}}{1} = -\sqrt{2}$



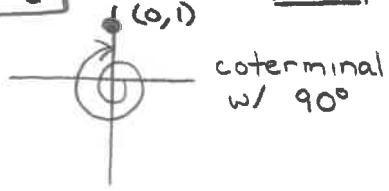

f. $\tan 240° = \frac{\sqrt{3}}{1} = \sqrt{3}$



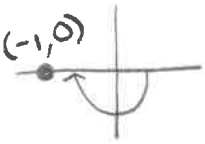

g. $\sin 225° = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$



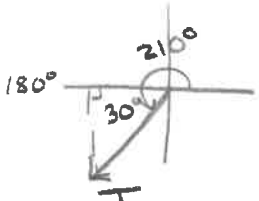

h. $\cos(-630°) = 0$



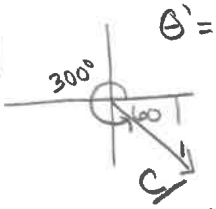

i. $\sec(-180°) = -1$



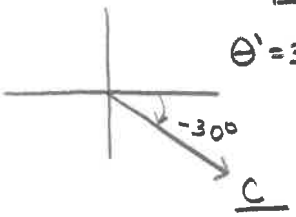

j. $\sec 210° = -\frac{2}{\sqrt{3}} = \frac{-2\sqrt{3}}{3}$



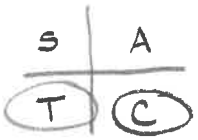

k. $\sec 300° = \frac{2}{1} = 2$




l. $\cos(-30°) = \frac{1}{2}$




4. Find all values of θ, if θ is in the interval $[0°, 360°)$ and $\sin\theta = -\frac{\sqrt{3}}{2}$




$\theta' = 60°$

$\theta = 240°$ and $300°$

5. Approximate the value of each expression with a calculator:

a. $\sin 35.8471°$

$= 0.5856$

b. $\sec(-287°)$

$= 3.4203$

6. Find an angle θ in the interval $[0°, 90°)$ that satisfies each condition.

a. $\cos\theta = 0.92118541$

$\cos^{-1}(\cos\theta) = \cos^{-1}(0.92118541)$

$\theta = \cos^{-1}(0.92118541)$

$\theta = 22.8999°$

b. $\cot\theta = 1.4466474$

$\theta = \cot^{-1}(1.4466474)$

$\theta = 34.6543°$